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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

IN RE: CATHODE RAY TUBE (CRT) ANTITRUST LITIGATION	) MDL NO. 1917
	)
	) Case No. 07-cv-5944-JST
This Document Relates to:	)
	) **INDIRECT PURCHASER PLAINTIFFS'**
ALL INDIRECT PURCHASER ACTIONS	) **UPDATED PROPOSED FINDINGS OF**
	) **FACT AND CONCLUSIONS OF LAW**
	)
	) Hearing Date: May 19-21, 2025
	) Courtroom: 6, 2nd Floor
	)
	) Judge: The Honorable Jon S. Tigar
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IPPS' UPDATED PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW
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GLOSSARY OF TERMS

BMCC	Beijing-Matsushita Color CRT Company, Ltd.
CAC	Indirect Purchaser Plaintiffs' Fifth Consolidated Amended Complaint, ECF No. 5589
Chunghwa	Chunghwa Picture Tubes Ltd. and Chunghwa Picture Tubes (Malaysia) Sdn. Bhd., collectively
CRT	Cathode Ray Tube
Daewoo/Orion	Daewoo Electronics Company, Ltd., Orion Electric Company, and Daewoo-Orion Société Anonyme, collectively
FOF	Findings of Fact
Guerin-Calvert Rpt. (TX 11)	Expert Report of Margaret E. Guerin-Calvert dated August 5, 2014 and Errata dated September 23, 2014 (Indirect Purchaser Actions)
Guerin-Calvert Surrebuttal (TX 13)	Expert Surrebuttal Report of Margaret E. Guerin-Calvert dated November 6, 2014 (Indirect Purchaser Actions)
Guerin-Calvert Supp. Rpt. (TX 14)	Supplemental Expert Report of Margaret E. Guerin-Calvert dated March 16, 2022 and Errata dated March 21, 2022 (Indirect Purchaser Actions)
Hitachi	Hitachi, Ltd., Hitachi Displays, Ltd., Hitachi Electronics Devices (USA), Inc., Hitachi America, Ltd., Hitachi Asia, Ltd., Shenzhen SEG Hitachi Color Display Devices, Ltd., collectively
Hr'g Tr.	Hearing Transcripts for the May 19-21, 2025 Damages Hearing
IPPs	Indirect-Purchaser Plaintiffs
Irico	Irico Group Corporation, Irico Display Devices Co., Ltd., Irico Group Electronics Co., Ltd., collectively
Johnson Rpt. (TX 202)	Expert Report of Phillip M. Johnson, Ph.D. dated May 26, 2023 (Direct Purchaser Actions)
LG Electronics	LG Electronics, Inc., LG Electronics U.S.A., Inc., and LG Electronics Taiwan Taipei Co., Ltd., collectively
LP Displays	LP Displays International, Ltd. (f/k/a LG Philips Displays)
MTPD	MT Picture Display Co., Ltd.

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Mitsubishi	Mitsubishi Electric Corporation, Mitsubishi Electric & Electronics USA, Inc., and Mitsubishi Digital Electronics Americas, Inc., collectively
Netz Class Cert. Rpt. (TX 1)	Declaration of Janet S. Netz, Ph.D., in Support of Motion of Indirect-Purchaser Plaintiffs for Class Certification dated October 1, 2012 and Errata dated October 9, 2012
Netz Class Cert. Rebuttal (TX 2)	Rebuttal Declaration of Janet S. Netz, Ph.D., in Support of Motion of Indirect-Purchaser Plaintiffs for Class Certification dated February 15, 2013
Netz Rpt. (TX 3)	Expert Report of Janet S. Netz, Ph.D. dated April 15, 2014 and Errata dated July 3, 2014
Netz Rpt. Errata (TX 3)	Errata to the Expert Report of Janet S. Netz, Ph.D. dated July 3, 2014
Netz Rebuttal (TX 5)	Rebuttal Expert Report of Janet S. Netz, Ph.D. dated September 26, 2014
Netz Daubert Decl. (TX 7)	Declaration of Janet S. Netz, Ph.D. in Response to Irico Defendants' Motion to Partially Exclude Testimony dated March 20, 2023
Panasonic	Panasonic Corporation (f/k/a Matsushita Electric Industrial Co., Ltd.), Panasonic Corporation of North America, and Matsushita Electronic Corporation (Malaysia) Sdn Bhd., collectively
Philips	Koninklijke Philips Electronics N.V. a/k/a Royal Philips Electronics N.V., Philips Electronics North America Corporation, Philips Electronics Industries (Taiwan), Ltd., and Philips da Amazonia Industria Electronica Ltda., collectively
Samsung	Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung SDI Co., Ltd. (f/k/a Samsung Display Device Co., Ltd.), Samsung SDI America, Inc., Samsung SDI Mexico S.A. de C.V., Samsung SDI Brasil Ltda., Shenzhen Samsung SDI Co., Ltd., Tianjin Samsung SDI Co., Ltd., and Samsung SDI (Malaysia) Sdn. Bhd., collectively
Samtel	Samtel Color, Ltd.
Tatung	Tatung Company of America, Inc.
Thai CRT	Thai CRT Company, Ltd.
Thomson	Thomson SA (n/k/a Technicolor SA) and Thomson Consumer Electronics, Inc. (n/k/a Technicolor USA, Inc.), collectively

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Toshiba	Toshiba Corporation, Toshiba America, Inc., Toshiba America Consumer Products, LLC, Toshiba America Information Systems, Inc., Toshiba America Electronics Components, Inc., and Toshiba Display Devices (Thailand) Company, Ltd., and P.T. Tosummit Electronic Devices Indonesia, collectively
TX	Trial Exhibits to the May 19-21, 2025 Evidentiary Hearing before Judge Jon S. Tigar
Videocon	Videocon Industries, Ltd.
Willig Rpt. (TX 10)	Expert Report of Robert D. Willig dated August 5, 2014 and Errata dated September 10, 2014 and September 23, 2014 (Indirect Purchaser Actions)
Willig Surrebuttal (TX 12)	Expert Surrebuttal Report of Robert D. Willig dated November 6, 2014 (Indirect Purchaser Actions)

Pursuant to the Court's Order Re: Damages Hearing dated March 5, 2025 (ECF No. 6459), Indirect-Purchaser Plaintiffs ("IPPs") submit their Updated Proposed Findings of Fact and Conclusions of Law.

<div align="center">PROPOSED FINDINGS OF FACT</div>

I.   PROCEDURAL HISTORY

1.   IPPs' operative complaint ("CAC") alleges that during the period from March 1, 1995 through November 25, 2007 (the "Class Period"), Defendants Irico Group Corporation ("Group") and Irico Display Devices Co., Ltd. ("Display") (collectively, "Irico") participated in a global cartel to fix prices, control output and allocate market shares and customers of cathode ray tubes (CRTs), including both color picture tubes ("CPTs") used in manufacturing televisions, and color display tubes ("CDTs") used in computer monitors. CAC ¶¶ 1-3, 125-126, 142-166, 248, 254, 258-288.

2.   The CAC alleges that Defendants' cartel raised the prices of CPTs and CDTs above competitive levels (*id.* ¶¶ 142, 195-200), and that the overcharges were passed through to indirect-purchaser class members in the form of higher prices for CRT televisions and monitors (*id.* ¶¶ 225-242). IPPs' claims against the dozens of Defendants named in the complaint, other than Irico, were long ago resolved. Only the claims against Irico remain.

3.   Because the Court has entered terminating sanctions against Irico for its willful failure to search for and preserve relevant evidence and its abuses of the discovery process, no issues of liability remain. *See In re Cathode Ray Tube (CRT) Antitrust Litig.*, No. 07-cv-5944-JST, 2024 WL 4823938, at *23 (N.D. Cal. Nov. 15, 2024). The issues of whether there was a CRT cartel, whether Irico participated, whether the cartel successfully raised CRT prices above competitive levels, and whether the overcharges were passed through to indirect purchasers are resolved against Irico. Irico's answers, including its affirmative defenses, have been stricken, and its default has been entered. *Id.* Irico is thus jointly and severally liable for the harm inflicted on

1 the indirect purchaser classes by the CRT cartel. The only remaining issue is to quantify the

2 amount of harm inflicted by the cartel. *Id.*

3   4.   As to the damages period, IPPs may recover damages from Irico dating back to

4 March 1, 1995, the alleged latest start date of the conspiracy. Order Sustaining Evidentiary

5 Objections and Setting Start Date for Damages (May 14, 2025), ECF No. 6482.

6   5.   To determine damages following the Court's grant of terminating sanctions

7 against Irico Defendants, the Court held an evidentiary hearing from May 19 through May 21,

8 2025, at which the parties presented expert evidence regarding the effectiveness of the alleged

9 CRT cartel on a classwide basis and the quantification of damages.

10 **II.   THE PARTIES**

11   6.   IPPs are comprised of the following certified classes:

12   All persons and entities in [Indirect-Purchaser State] who, from March 1, 1995
         to November 25, 2007, as residents of [Indirect-Purchaser State], purchased
13   Cathode Ray Tubes incorporated in televisions and monitors in [Indirect-
         Purchaser State] indirectly from any defendant or subsidiary thereof, or any
14   named affiliate or any named co-conspirator, for their own use and not for
         resale. Specifically excluded from this Class are defendants; the officers,
15   directors, or employees of any defendant; the parent companies and subsidiaries
         of any defendant; the legal representatives and heirs or assigns of any
16   defendant; and the named affiliates and co-conspirators. Also excluded are any
         federal, state, or local governmental entities, any judicial officers presiding over
17   this action, members of their immediate families and judicial staffs, and any
         juror assigned to this action.
18

19 *See In re Cathode Ray Tube (CRT) Antitrust Litig.,* No. 07-cv-5944-JST, 2013 WL 5429718, at

20 *24-29 (N.D. Cal. June 20, 2013), *report and recommendation adopted*, No. C-07-5944-SC,

21 2013 WL 5391159 (N.D. Cal. Sept. 24, 2013).

22

23   7.   The indirect-purchaser Class States include: Arizona, California, District of

24 Columbia, Florida, Hawaii, Iowa, Kansas, Maine, Michigan, Minnesota, Mississippi, Nebraska,

25 Nevada, New Mexico, New York, North Carolina, North Dakota, South Dakota, Tennessee,

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1   Vermont, West Virginia, and Wisconsin. The applicable class period for Hawaii, Nebraska, and

2   Nevada begins from June 25, 2002, July 20, 2002, and February 4, 1999, respectively. *Id.*

3   8.   Defendant Irico Group Corporation is a Chinese corporation with its principal

4   place of business located at 1 Caihong Rd., Xianyang City, Shaanxi Province 712021. CAC ¶ 95.

5   9.   Defendant Irico Display Devices Co., Ltd. is a Chinese company with its principal

6   place of business located at No. 16, Fenghui South Road West, District High-tech Development

7   Zone, Xi'an, SXI 710075. Irico Display is a partially-owned subsidiary of defendant Irico Group.

8   CAC ¶ 96.

9   10.   The findings of fact set out below apply to the claims of indirect-purchaser classes

10   against Irico Group and Irico Display.

11   **III.   MEMBERSHIP OF THE CARTEL**

12   11.   The CRT cartel was comprised of fifteen Defendant entities or groups: BMCC,

13   Chunghwa, Daewoo/Orion, Hitachi, Irico, LG Electronics, LP Displays, MTPD, Panasonic,

14   Philips, Samsung, Samtel, Tatung, Thai CRT, and Toshiba. Three firms, Thomson, Mitsubishi,

15   and Videocon, were identified as co-conspirators with the members of the CRT cartel. CAC ¶¶

16   50-112. The cartel's conspiracy extends from at least March 1, 1995 through at least November

17   25, 2007. *Id.* ¶¶ 16, 142.

18   12.   Irico, like the other cartel members, participated in the cartel from as early as 1995

19   and throughout its existence. The CAC alleges that CRT makers began their conspiratorial

20   meeting and communications in at least 1995. CAC ¶ 2. By 1997, a formal system of multilateral

21   and bilateral meetings was established, with the sole purpose of fixing CRT product prices at

22   supra-competitive levels. *Id.* The CAC further alleges that the conspiracy caused harm to IPPs

23   and the indirect-purchaser consumer classes because it resulted in their paying higher prices for

24   CRT televisions and monitors than they would have paid in the absence of the conspiracy. *Id.* ¶¶

25   225-242.

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IV.   THE CRT INDUSTRY

13.   CRTs primarily consist of a large glass bulb containing an electron gun and a pair of devices near the rear of the bulb that focus and aim an electron beam. TX 3 (Netz Rpt.) at 7.

14.   CRTs sold for use in computer monitors are called "color display tubes" or CDTs. CRTs sold for use in TVs are called "color picture tubes" or CPTs. Although similar in technology, the two types of tubes are not functional or economic substitutes. CAC ¶ 14; TX 3 (Netz Rpt.) at 7-8.

15.   CRTs have a small number of economically meaningful dimensions of product differentiation, namely, size, shape, and finish. TX 3 (Netz Rpt.) at 7.

16.   The size of the tube is typically measured diagonally across the screen. For CDTs, the most common size ranges from 14" to 21" during the Class Period and for CPTs they were between 14" and 34" during the Class Period. *Id.* at 9.

17.   The shape of a panel refers to how flat they are. Traditionally, the front panel of a CRT was a portion of a sphere, but over time, manufacturers increased the radius of curvature of the screens to make them flatter. *Id.*

18.   Finish or the degree to which assembly is completed by the manufacturer is the third primary dimension of differentiation. When a CRT is shipped without a deflection yoke, it is called a "bare" CRT. A CRT with a deflection yoke is called an "integrated tube component" (ITC) CRT. *Id.* at 10.

19.   There are a few other variations that sometimes come into play regarding pricing (such as shadow mask, resolution, or performance standards), but these are relatively insignificant. *Id.*

20.   The Herfindahl-Hirschman Index (HHI), a widely used metric in antitrust legal and economic analyses, shows that the CRT manufacturing industry was highly concentrated with the cartel in place. HHI values with the cartel in place exceeded 8,000 for CDT production and over 7,000 for CPT production. *Id.* at 18. The HHI value with the cartel in place for CRT

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manufacturing combined exceeded 7,800, well above the 2,500 threshold for a highly concentrated industry. *Id.*

21.   During the Class Period, the CRT industry was characterized by persistent excess capacity and falling demand as LCD products replaced CRT products; this situation is sometimes referred to as a "sick industry." Absent a cartel, the participants in such a "sick industry" would have engaged in ruinous competition, creating a strong incentive to form a cartel and ensure its success. *Id.* at 18-21.

22.   CRTs were distributed from Defendants to class members through a distribution chain that generally included the following levels: CRT manufacturers sold tubes to product manufacturers (sometimes via a distributor); CRT product manufacturers sold CRT monitors and TVs to retailers (sometimes via a distributor); retailers sold the CRT products to end-consumers. *Id.* at 22-25.

23.   The distribution system was largely the same for both CRT monitors and CRT TVs. *Id.*

24.   End-consumers are indirect purchasers who typically purchased CRT monitors and TVs from retailers. They purchased CRT products for their own use and did not resell them. These end-consumers make up the several indirect-purchaser classes in this case. *See CRT,* 2013 WL 5429718, at *24-29.

V.   THE CRT CARTEL HAD A WIDESPREAD IMPACT AND INCREASED THE PRICES OF ALL TYPES OF CRT TUBES ABOVE COMPETITIVE LEVELS

25.   The cartel had a widespread effect and increased the prices of all types of CRT tubes above competitive levels.

26.   This widespread effect was supported by characteristics of the marketplace and conduct of the cartel, and was confirmed by industry participants and empirical analyses performed by IPPs' economic expert, Dr. Janet S. Netz. Hr'g Tr. 17:18-32:8.

A.   **Economic Characteristics of the CRT Market**

27.   The CRT industry exhibited the characteristics that are necessary for a cartel to be able to increase and sustain prices above competitive levels: market power and barriers to entry. Hr'g Tr. 19:5-13; TX 3 (Netz Rpt.) at 32-35.

a.   *__Defendants Had Market Power__*

28.   The CRT cartel dominated the supply of CRTs as a whole and CPTs and CDTs separately. Specifically, since the cartel members accounted for nearly 90% of the global CRT production, non-cartel members could not prevent the cartel from raising prices above competitive levels. Hr'g Tr. 19:22-20:23; TX 3 (Netz Rpt.) at 33 and Ex. 11.

29.   Likewise, the CRT cartel controlled nearly 90% of worldwide CRT capacity. As a result, when the cartel restricted output, non-cartel members lacked the capacity to offset these reductions or limit the cartel's ability to restrict output. Hr'g Tr. 19:22-20:23; TX 3 (Netz Rpt.) at 33 and Ex. 12.

30.   These market share numbers are sufficient to establish that the members of the cartel had market power. Hr'g Tr. 20:8-15.

b.   *__There Were Barriers to Entry__*

31.   Due to barriers to entry, there was no possibility of meaningful entry to constrain the cartel's ability to raise prices above competitive levels or restrict output. *Id.* at 21:20-22:22; TX 3 (Netz Rpt.) at 33-35.

32.   To enter the CRT market, a firm would be required to make a large capital investment and possess or acquire technical knowledge. Even if it could acquire the capital and knowledge necessary, entry into the market could take years. Hr'g Tr. 21:20-22:22; TX 3 (Netz Rpt.) at 33-34. Irico's economic expert, Ms. Margaret E. Guerin-Calvert, agreed that the industry had high entry barriers. Hr'g Tr. 336:5-24.

33.   During the Class Period, the CRT industry had excess capacity and low returns on capital. A low rate of return makes entry undesirable. Excess capacity also deters entry because

1   potential entrants know that existing firms may increase output if entry occurs, leading prices to

2   fall and making the decision to enter the market less profitable or even unprofitable. *Id.* at 22:10-

3   18; TX 3 (Netz Rpt.) at 34.

c.   _Lack of Economic Substitutes_

5   34.   LCD (liquid crystal display) technology came online in the late 1990s and

6   eventually displaced CRT technology for both CPTs and CDTs. By 2001, however, LCD had

7   less than 10 percent of the worldwide monitor share market. TX 3 (Netz Rpt.) at 35 and Ex. 13.

8   Similarly, by 2006, 12 years into the cartel period, LCD screens had less than 20 percent of the

9   worldwide TV market. *Id.* at 35 and Ex. 14. It was not until 2004 that worldwide shipments of

10   LCD monitors outpaced shipments of CRT monitors. The same occurred for TVs in 2008. TX

11   3 (Netz Rpt.) at 35 and Exs. 13-14.

12   35.   LCDs did not prevent the CRT cartel from imposing overcharges. Hr'g Tr. 20:24-

13   21:19; TX 3 (Netz Rpt.) at 36. Despite the shrinking market for CRTs, few customers' purchasing

14   decisions were impacted by LCDs given that LCDs were far more expensive. In addition, the

15   size of the LCD market was small. Hr'g Tr. 20:24-21:19; TX 3 (Netz Rpt.) at 36. As Dr. Netz

16   explained, "[i]f the CRT cartel members tried to reduce their prices to compete with the far more

17   expensive LCD products, they would not have been able to persuade enough additional consumers

18   [switching from LCD products] to buy CRT products to make up for the money they would lose

19   by lower prices." TX 3 (Netz Rpt.) at 35; *see also* Hr'g Tr. 21:15-19.

20   36.   Although the degree of substitutability between CRTs and LCDs was not

21   significant enough to prevent cartel overcharges, LCDs may have had an impact on the magnitude

22   of the overcharge. Dr. Netz accounted for this in her overcharge regression by including variables

23   capturing the degree of market penetration from LCDs. Hr'g Tr. 41:14-42:15; TX 3 (Netz Rpt.)

24   at 103; TX 5 (Netz Rebuttal) at 21. By so doing, Dr. Netz controlled "for the influence of the

25   growth of LCDs in the market" and allowed it to "have an impact on the price of CRTs." Hr'g

26   Tr. 41:14:42-15.

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37.   Certain CRT market characteristics may make it more difficult to collude, such as product differentiation, changes in market conditions over time, and vertical integration. *Id.* at 22:23-23:12; TX 11 (Guerin-Calvert Rpt.) ¶¶ 26-50.[1] However, none of these characteristics create an insurmountable burden to a successful cartel, and there are real-word cartels that have many of these characteristics. Hr'g Tr. 22:23-23:12; TX 5 (Netz Rebuttal) at 3, 22-24.

B.   The Cartel's Conduct Contributed to Successfully Exercising Its Market Power to Raise Prices of CRTs Above Competitive Levels

38.   The CRT cartel engaged in the types of conduct that predict the success of the cartel in raising prices above competitive levels. Hr'g Tr. 18:9-17; TX 3 (Netz Rpt.) at 41-62; TX 5 (Netz Rebuttal) at 40-41.

39.   In summary, the cartel members engaged in a wide range of conduct that economists have documented would lead to the success of a cartel, including:

- agreeing to set specific prices;
- agreeing to limit production and capacity;
- agreeing to allocate customers,
- sharing proprietary information;
- using "most favored customer" clauses;
- establishing a regular, hierarchical set of meetings that occurred over the cartel period;
- auditing agreements to shut down production lines or factories; and
- monitoring and policing their collusive agreements.

Hr'g Tr. 18:18-19:4; TX 3 (Netz Rpt.) at 41-61. This range of anti-competitive conduct shows that the CRT cartel not only set target prices but also engaged in a variety of conduct contributing to the ability of the cartel to raise the prices of all types of tubes to supra-competitive levels. Hr'g Tr. 18:2-17.

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[1] During the merits expert discovery phase of this case in 2014, Defendants served expert reports of Ms. Guerin-Calvert focused on CDTs and Professor Robert Willig focused on CPTs. Professor Willig has since passed away and Ms. Guerin-Calvert has "adopt[ed] his conclusions and analyses in full as reflecting [her] own expert opinion." TX 14 (Guerin-Calvert Supp. Rpt.) ¶ 14; Hr'g Tr. 291:12-21.

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a. *The Cartel Developed a Hierarchical Structure of Meetings*

2   40.   The cartel established a hierarchy of meetings with three levels: Top Management

3   Meetings, Management Meetings, and Working Level Meetings, collectively known as "Glass

4   Meetings." *Id.* at 18:18-19:4; TX 3 (Netz Rpt.) at 42; CAC ¶¶ 145-160.[2]

5   41.   Top Management Meetings, attended by high-ranking executives, were held

6   quarterly for much of the Class Period, later reducing to one or two meetings per year. These

7   meetings focused on reaching agreements about cartel policy, such as prices, capacity, and market

8   division. TX 3 (Netz Rpt.) at 42-44; CAC ¶ 148. Additionally, Green Meetings, held on golf

9   courses, provided opportunities for top executives to form personal relationships and build trust

10   among cartel members. TX 3 (Netz Rpt.) at 44; CAC ¶ 151.

11   42.   Management Meetings were typically held monthly and involved sales directors

12   and managers. These meetings aimed to reach agreements on cartel policy such as prices and

13   capacity, exchange market intelligence, and monitor the implementation of cartel agreements,

14   including compliance with cartel prices and capacity restrictions. TX 3 (Netz Rpt.) at 44-45;

15   CAC ¶ 149.

16   43.   Working Level Meetings attended by sales staff, and sometimes their supervisors,

17   were held regularly to prepare for Management Meetings. TX 3 (Netz Rpt.) at 45-46; CAC ¶

18   150.

19   44.   Cartel members also met frequently outside of Glass Meetings in bilateral

20   meetings and communicated regularly by phone and fax. TX 3 (Netz Rpt.) at 46; CAC ¶¶ 161-

21   166.

22   45.   Collusion among members of the cartel began at least as early as February 1995,

23   with meetings to discuss CPT pricing, production, and sales. TX 3 (Netz Rpt.) at 42 and n.143.

24   These meetings spanned most of the Class Period, with the earliest documented meeting in

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26   [2] Irico's economic expert, the late Professor Robert Willig, acknowledged that "frequent meetings"
   in an industry are a "plus factor" that can facilitate collusion and help overcome challenges to

27   cartel success. Hr'g Tr. 337:19-338:19.

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February 1995 and the latest in February 2007. *Id.* at 47-48 and Ex. 1. The cartel fixed prices for both CPTs and CDTs, including tubes with varying sizes, shapes, finishes, and other characteristics. *Id.* Over 130 meetings were documented, during which cartel members agreed to set target prices for one or more CRTs. *Id.*

46.   The cartel was fully active in 1995-1996, with numerous meetings and communications to fix prices, restrict production, allocate customers, and exchange confidential information. *Id.* at 46, 52-53 and nn.155, 180, 182 (listing documents dated in 1995 and 1996); TX 5 (Netz Rebuttal) at 14, 57 and Ex. RR-85 (listing over 70 meetings and communications during 1995-1996).

b.   *The Cartel Used Target Prices to Fix Prices*

47.   Cartel members used target prices to fix prices, as documented in meeting notes and formal tables included in those notes. Meeting notes reference agreements to increase prices, set price differentials, maintain current prices, or coordinate price reductions, and also discuss when to send price increase letters to customers. Hr'g Tr. 18:18-19:4; TX 3 (Netz Rpt.) at 49-50.

c.   *The Cartel Imposed Output and Capacity Restrictions*

48.   In addition to agreeing to fix prices, the cartel agreed to restrict CRT output and capacity on numerous occasions, for both CDTs and CPTs. Hr'g Tr. 18:18-19:4. Initially, these agreements led to temporary shutdowns of specific production lines, reducing output and raising prices during the downtime. Between 2001 and 2005, the cartel implemented long-term shutdowns, decreasing the cartel members' ability to produce output, raising prices, and limiting their ability to cheat on cartel prices and output. These capacity reductions were explicitly aimed at increasing prices. TX 3 (Netz Rpt.) at 50-51 and Exs. 28-29.

d.   *The Cartel Shared Proprietary Information*

49.   Cartel members repeatedly shared confidential competitive information with each other. Hr'g Tr. 18:18-19:4. The exchanges included information about future prices, as well as projections of demand, current capacity, projected capacity, projections of excess supply, and

1   plans for introduction of new products. TX 3 (Netz Rpt.) at 51-54. Cartel members repeatedly

2   confirmed that the exchange of information reduced competition. *Id.* at 54 and n.185.

3   e.   ***The Cartel Established Monitoring and Enforcement Procedures***

4   50.   Cartel members monitored compliance with temporary line shutdowns by sending

5   representatives of the cartel on site visits to verify that production had halted. Hr'g Tr. 18:18-

6   19:4; TX 3 (Netz Rpt.) at 55-56. Cartel members also monitored agreements to fix prices and

7   restrict quantity. TX 3 (Netz Rpt.) at 57. The cartel threatened cheaters with punishment in the

8   form of price competition from the cartel. *Id.* at 57-58. The cartel's monitoring and punishment

9   efforts induced cheaters to comply with cartel policies on at least several occasions. *Id.*

10   51.   Cheating by cartel members is not unusual and must not be confused with a

11   competitive outcome. For example, Defendants' contemporaneous business documents suggest

12   the cartel members did not always raise prices to the full extent that they had agreed upon. *Id.* at

13   50. Observing a price below an agreed target price (or any other form of cheating) is not evidence

14   that the observed price is a competitive price. Hr'g Tr. 53:5-54:11; TX 5 (Netz Rebuttal) at 37-

15   38.

16   f.   ***The Cartel Allocated Customers to Suppliers***

17   52.   Cartel members allocated customers using two schemes: major customers were

18   assigned to cartel members as either primary or secondary suppliers, with primary suppliers'

19   prices set slightly below those of secondary suppliers to encourage larger purchases from primary

20   suppliers. Hr'g Tr. 18:18-19:4; TX 3 (Netz Rpt.) at 59. Additionally, the cartel established targets

21   for the shares of major customers' purchases to be supplied by each allocated cartel member. TX

22   3 (Netz Rpt.) at 59-60. The cartel also divided the market by setting target shares of all CDT

23   sales for each customer. *Id.* at 60.

24   g.   ***The Cartel Used Most-Favored Customer Clauses***

25   53.   Cartel members employed most-favored customer clauses in purchase agreements.

26   Hr'g Tr. 18:18-19:4. These terms promised customers they would receive prices no worse than

27   prices charged other customers, and helped to maintain cartel discipline by raising the cost of

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cheating: if a cartel member cheated by offering low prices to one customer, it had to offer the same low prices to all customers that had been granted most-favored customer status. This reduced the incentive for a cartel member to cheat on the cartel agreement by lowering prices. TX 3 (Netz Rpt.) at 60-61.

h.   *There Was a Structure to Pricing*

54.   The ability of the cartel to raise the prices of all types of tubes was further facilitated by the price structure that was found in the CRT industry. Price structure, which is well-recognized among economists, means that in this industry the prices of various different sizes and types of tubes are related by reference to a relatively few characteristics of the tubes. In this way, the change in the price of a particular tube would have a known effect on the prices of other tubes. By the cartel explicitly setting a target price for certain tubes ("target prices"), the price of other tubes would rise as well. Hr'g Tr. 26:1-31:19; TX 3 (Netz Rpt.) at 64.

55.   As the Nobel Laureate George Stigler wrote: "It is part of the task of maximizing industry profits to employ a price structure that takes account of the larger differences in the costs of various classes of transactions . . . A Price structure of some complexity will usually be the goal of collusive oligopolists." A Theory of Oligopoly, The Journal of Political Economy, Vol. 72, Issue 1 (Feb. 1964), at 45; *see also* Hr'g Tr. 26:8-15.

56.   Cartel members recognized this price structure and repeatedly collusively fixed prices with reference to these price structure relationships by fixing price differentials among various tubes. *Id.* at 27:8-31:19; TX 3 (Netz Rpt.) at 67 and Ex. 39.

57.   This price structure was confirmed by hedonic regression analyses performed by Dr. Netz that show that CRT prices are determined primarily by a handful of product attributes. Hr'g Tr. 32:9-17; TX 3 (Netz Rpt.) at 64, 68-69 and Exs. 40-41.[3]

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[3] Dr. Netz was able to match target prices to approximately 29.7% of CPT sales and 39.0% of CDT sales in Defendants' data. TX 3 (Netz Rpt.) at 63. While Irico's experts made lower "target price coverage" estimates than Dr. Netz (*see* Hr'g Tr. 219:13-220:13), these lower estimates do not refute that there is a price structure in this industry, and the price structure extends the effect of the target price fix to other types of tubes. Dr. Netz's target price analysis showed that as target prices

i.   ***The Cartel's Success Is Confirmed by Statements and Conduct of Cartel Members***

58.   Numerous statements and conduct of cartel members demonstrate that the cartel was successful. TX 3 (Netz Rpt.) at 27-30.

59.   In contemporaneous business documents, including notes from cartel meetings, cartel members repeatedly declared their ability and intent to raise and maintain the prices of CPTs and CDTs above competitive levels. Cartel members also regularly reported their success in raising or maintaining prices for CPTs and CDTs. *Id.* at 27.

60.   Numerous cartel meeting notes and other contemporaneous documents demonstrate that the cartel succeeded in reducing capacity and cutting production to raise or maintain prices above competitive levels. *Id.* at 29-30.

61.   Rational cartel members would not have engaged in the costly and risky conduct of participating in the cartel for more than a decade if it had not been successful. *Id.* The fact that CRT industry executives continued to actively participate in the cartel for years strongly indicates that the benefits of their participation outweighed the costs. *Id.* at 31-32.

C.   The Cartel's Target Prices Were Effective in Raising the Prices of All CRTs

62.   One method the cartel members used to elevate CRT prices above competitive levels was to set target prices, meaning they agreed on prices for specific tubes. *Id.* at 47-50. These target prices not only increased the prices for the particular tubes identified to the price fix but also generally raised the prices for all CRTs.

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went up, all actual prices rose, irrespective of whether a tube had a specific target price associated with it. That is, Dr. Netz showed empirically that the target price index, based on observed target prices, resulted in higher actual prices for all tubes, regardless of whether a target price was observed for that type of tube. *Id.* at 32:4-24; TX 3 (Netz Rpt.) at 71-72 and Exs. 44-45. Furthermore, Ms. Guerin-Calvert admitted that, as a matter of economic theory, cartels can successfully raise prices without setting target prices. Hr'g Tr. 320:3-321:16. She acknowledges that setting target prices was only one aspect of the cartel conduct that Dr. Netz relied upon in evaluating the cartel's effectiveness. *Id.* at 318:16-320:2.

a.   *The Cartel Had the Economic Incentive to Fix Prices Across All Substitutable Products*

63.   Firms that enter into a cartel seek to maximize profits. When a cartel involves multiple substitutable products, as with the CRT cartel, the economic incentive among cartel members is to fix the price of all products and not just some; otherwise, customers will simply shift from the products with supra-competitive prices to the products with cheaper, competitive prices, which defeats the purpose of the cartel. Hr'g Tr. 26:16-27:1; TX 3 (Netz Rpt.) at 66.

b.   *Cartel Participants Recognized the Importance of Raising Prices of All Tubes*

64.   The incentive for cartel members to raise the price of all CRTs above competitive levels was confirmed by participants in the cartel. When Chunghwa's Vice President of Sales, C.C. Liu,[4] was asked at his deposition what would happen if the price of 17" tubes were raised without raising the price of 15" tubes, he unequivocally refused the premise that such a thing would have happened, saying that the cartel did not even discuss such a possibility. Citing the professionalism of those setting prices, he said that they "would certainly raise the prices [of other tubes] at the same time," absent any pre-existing imbalance in the relative price that needed correction:

> Q. Let's assume for a moment that you were to raise the price of 15-inch color picture tubes, without changing the price of the 17-inch color picture tubes. Do you have an understanding, based upon your years of experience in the CRT business, what effect, if any, that would have on the relative mix of sales of 15-inch and 17-inch CPT tubes?
>
> THE WITNESS: This question is not difficult. We are professionals in this industry. We are selling tubes like professionals if not experts. How could we only change the price of a 15 inches tubes without changing the prices for 17 inches of tubes? Of course, we would consider the overall market structure and the market acceptance and the reasonable cost gaps. We would certainly raise the prices at the same time.

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[4] C.C. Liu was involved in the CRT cartel from 1995 to 2005 and a regular attendee at hierarchical meetings of CRT cartel meetings. Hr'g Tr. 27:16-22.

> Q. [...] Do you recall whether the participants in the group and one-on-one meetings would have discussions about the effect – possible effects of changing one – the price of, say, 15-inch tubes on the sales on 17-inch tubes?
>
> THE WITNESS: Not really considering the price will be an overall comprehensive consideration of all products, we would not focus only on one type of products unless the cost gaps were unreasonably different. We would not only raise the price for 15 inches without changing prices of all other items unless there is a particular situation that the purchase of 17 inches was not that strong and the purchase for 15 inches was particularly strong. Otherwise we would have an overall comprehensive consideration of the products categorically.

Id. at 66-67; Hr'g Tr. 27:8-30:3.

65.   Other cartel participants also recognized the relationship between prices of different CRTs. TX 3 (Netz Rpt.) at 68 and n.214 (listing multiple examples) and Ex. 39; Hr'g Tr. 30:4-31:19.

c. *Dr. Netz's Empirical Analyses Confirm that the Cartel Raised Prices for All Tubes*

66.   Whether the cartel was able to raise prices above competitive levels is an empirical question, which IPPs' expert, Dr. Netz, has answered through her empirical investigations and analyses. Hr'g Tr. 22:23-23:15, 32:2-8. Irico's expert, Ms. Guerin-Calvert, also agrees that her overcharge regressions show that the cartel had sufficient impact to raise the prices of CRTs above competitive levels. *Id.* at 386:5-12, 387:25-388:17.

67.   There were over 130 documented meetings among cartel members at which target prices were set. TX 3 (Netz Rpt.), Ex. 1. Based on the cartel meeting minutes and reports, Dr. Netz was able to match target prices to approximately 29.7% of CPT sales and 39.0% of CDT sales in the data produced by Defendants. *Id.* at 63. This is equivalent to $13.2 billion of CDT sales and $8.8 billion of CPT sales. TX 5 (Netz Rebuttal) at 9.[5]

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[5] Irico's experts' lower "target price coverage" estimates (*see* Hr'g Tr. 219:13-220:13) are flawed and unreliable because (1) the evidence shows that agreements reached at the meetings were communicated to non-attending Defendants such that it is appropriate to match target prices to non-attending Defendants' actual prices; (2) CRT prices were usually set on a quarterly, not a monthly basis; and (3) most of the data failed to identify the CRT shape. TX 5 (Netz Rebuttal) at 10-13.

68.   Prices charged by Defendants closely tracked the collusive target prices, demonstrating that the target prices set by cartel members had the effect of raising the prices of the particular CRT subject to that price fix. *See* TX 3 (Netz Rpt.) at 64-65 and Exs. 30-36.

69.   That target prices had the effect of raising the prices of the targeted CRTs is empirically confirmed by the CDT and CPT "Granger Causality" regression performed by Dr. Netz, which demonstrated that target prices strongly predicted the actual prices for the targeted tubes cartel members charged direct purchasers. Hr'g Tr. 32:18-24; TX 3 (Netz Rpt.) at 63-65. Her regression controls for changing supply and demand conditions. TX 3 (Netz Rpt.) at 65; TX 5 (Netz Rebuttal) at 45. These Granger Causality regressions performed by Dr. Netz provide reliable empirical confirmation that the cartel's activities increased the price for CRTs for which the cartel set targets. TX 3 (Netz Rpt.) at 65 and Exs. 37-38.[6]

70.   The prices of CDTs and CPTs for which there were no documented target prices set by cartel members also closely tracked the target prices. This is confirmed by statistically significant correlations between an index of target prices and an index composed of the prices of non-targeted CRTs. *Id.* at 71 and Exs. 42-43. Dr. Netz's "Granger Causality" regression analysis further showed that the target price index predicted the actual prices of all CRTs, including non-targeted CRTs. *Id.* at 71-72 and Exs. 44-45.

71.   This empirical evidence, together with economic theory, the structure of CRT pricing, and the observation of cartel members, shows that the cartel's collusive target prices had the effect of raising the prices of all CRTs—both those with target prices and those without— above competitive levels. *Id.* at 65, 71 and Exs. 37-38, 44-45.

72.   Irico presented analyses purporting to show wide dispersion in CDT and CPT prices. Hr'g Tr. 207:14-212:8; Ex. 11 (Willig Rpt.) ¶ 26 and Ex. 5. Irico exaggerates price

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[6] Ms. Guerin-Calvert's and Professor Willig's target price regressions also showed that the cartel's use of target prices led to higher actual prices (albeit at a lower magnitude). TX 5 (Netz 2014 Rebuttal Rpt.) at 43; TX 11 (Guerin-Calvert Rpt.) ¶ 75 and Table 4; TX 10 (Willig Rpt.) ¶ 43 and Ex. 8.

1   differences and masks the degree of price commonality because they simply plotted all observed

2   prices without regard for quantities or product attributes. TX 5 (Netz Rebuttal) at 28-29.

3   73.   Dr. Netz showed that CRT sales collapse into tight brands, showing very high

4   concentrations of sales within narrow price ranges when the size, shape and finish of the products

5   are considered. Notably, the CRT cartel explicitly considered those factors when they agreed on

6   their target prices. *Id.* (citing TX 2 (Netz Class Cert. Rebuttal) at 7-9 and Exs. 2-13).

7   **D.   The Overcharges to Direct Purchasers Caused by the Cartel**

8   74.   As a result of the cartel's collusive conduct, the prices paid by direct purchasers

9   of CDTs would have been 22.0 percent lower than the actual prices paid from 1995 to 2006 and

10   would have been 11.4 percent lower than the actual price in 2007. The prices paid by direct

11   purchasers of CPTs would have been 9.0 percent lower than actual prices paid during 1995 to

12   2006 and would have been 3.1 percent lower than actual prices paid in 2007. Hr'g Tr. 15:1-15.

13   **a.   *Dr. Netz's Overcharge Model Provides Reasonable Measures of Direct***

14   ***Overcharge***

15   75.   IPPs' economics expert, Dr. Netz, employed a well-accepted statistical

16   methodology to determine the extent to which the cartel was able to raise the prices of CRTs

17   above competitive levels.   Dr. Netz specified a reduced-form, dummy-variable multiple

18   regression model to determine the extent to which, if any, the prices charged to direct purchasers

19   of CRTs were above competitive levels. TX 3 (Netz Rpt.) at 98-99.

20   76.   Dr. Netz used regression analysis to quantify the relationship between prices and

21   the demand, cost and competitive conditions in the CRT industry using market data from periods

22   subject to and not subject to price-fixing. This method is often called a before-and-after method.

23   TX 1 (Netz Class Cert. Rpt.) at 85, n.264. Dr. Netz used data from 1993 through 2008 for CDTs

24   and 1993-2010 for CPTs. TX 3 (Netz Rpt.) at 101, 104-105.

25   77.   Dr Netz's model includes variables capturing CRT supply and demand factors to

26   isolate the price effect of the cartel. TX 3 (Netz Rpt.) at 102-103. By controlling for non-cartel

27   related supply and demand factors, the model isolates the impact of collusion on CRT prices

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1 separately from the changes in CRT prices due to supply and demand factors. Hr'g Tr. 33:21-

2 34:3. Dr. Netz's model is based on the economic facts of this case and produces reasonable and

3 reliable estimates of the CRT overcharges caused by the cartel, as found by the Court in the

4 preceding paragraph.

5   78.   Dr. Netz considered the public disclosure in late 2006 of cartel investigations by

6 the U.S. Department of Justice, Korean Fair Trade Commission, and Japanese Fair Trade

7 Commission against several LCD manufacturers, including some defendants in this case. Hr'g

8 Tr. 36:3-20; TX 3 (Netz Rpt.) at 99. Consequently, Dr. Netz divided the cartel dummy variable

9 period (1995Q2-2007Q4) into two segments based on the LCD investigation becoming public.

10 Specifically, the first segment includes 1995Q2-2006Q4 and the second includes 2007Q1-

11 2007Q4. Hr'g Tr. 35:21-36:25; TX 3 (Netz Rpt.) at 100. This division is supported by economic

12 literature. TX 3 (Netz Rpt.) at 99-100; TX 5 (Netz Rebuttal) at 56 and n.251 (citing economic

13 literature).

14   79.   Dr. Netz estimated separate CDT and CPT regressions based on her judgment—

15 formed through her investigation in this case—that CDT prices might respond differently to

16 economic forces than CPT prices. By running separate regressions, she allowed for differences

17 in the supply and demand factors and how they influence price, as well as allowing for different

18 overcharges for CDTs and CPTs. Hr'g Tr. 44:4-19; TX 3 (Netz Rpt.) at 104-105.

19   80.   Formulaically, Dr. Netz estimated the following reduced-form price equation to

20 quantify the CRT cartel effect:

$$\text{PRICE} = \theta_1 \text{ Cartel1995-2006} + \theta_2 \text{ Cartel2007}$$
$$+ \beta_1 \text{ Glass} + \beta_2 \text{ (Glass} \times \text{Size)} + \beta_3 \text{ (Glass} \times \text{Size}^2)$$
$$+ \beta_4 \text{ GDP} + \beta_5 \text{ U} + \beta_6 \text{ U}^2 + \beta_7 \text{ LCD} + \beta_8 \text{ LCD}^2$$
$$+ \gamma_1 \text{ Time} + \gamma_2 \text{ Time}^2 + \delta \text{ Quarter} + \eta \text{ Maker} + \rho \text{ (Maker} \times \text{Size)}$$

Hr'g Tr. 35:10-44:22. Dr. Netz ran this regression separately for both CDTs and CPTs, but with

different after periods as described above. *Id.* at 44:4-19; TX 3 (Netz Rpt.) at 104.

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1   81.   To control for the influence of supply and demand factors on CRT prices, Dr. Netz

2 used data relating to manufacturing costs, the availability of functional substitutes, changes in

3 demand conditions, and other market characteristics to reasonably control for non-cartel related

4 pricing influences. Hr'g Tr. 35:14-44:3; TX 3 (Netz Rpt.) at 102-103; TX 5 (Netz Rebuttal) at

5 57; *see also* TX 7 (Netz Daubert Decl.) at 4-6.

6   82.   The first line variables on the right-hand side of the equation are Dr. Netz's two

7 cartel dummy variables, one for 1995-2006 and a separate one for 2007. The indicator variable

8 *Cartel1995-2006* equals one from 1995Q2 until 2006Q4 and zero otherwise; *Cartel2007* equals

9 one from 2007Q1 until 2007Q4 and zero otherwise. *Id.* at 35:19-36:25; TX 3 (Netz Rpt.) at 104.

10   83.   Dr. Netz's economic judgment to bifurcate the cartel period into 1995-2006 and

11 2007 time periods—based on the public disclosure of the LCD investigation—is reasonable, as

12 evidenced by the significantly different and lower overcharge for 2007 than for 1995-2006. Hr'g

13 Tr. 36:21-25.

14   84.   The second line on the right-hand side of the equation contains supply-related

15 variables that directly control for manufacturing costs. Defendant-specific cost data produced in

16 this case was insufficient and deficient for use in the regression analysis.[7] *Id.* at 37:1-24. Since

17 material costs of making a CRT are approximately 70 percent of the total cost, and glass is the

18 single most important cost input, Dr. Netz used a variable to capture changes in the cost of the

19 specific type of glass needed, i.e., CRT glass. *Id.* at 37:10-21; TX 3 (Netz Rpt.) at 102. Dr. Netz

20 used the Bank of Korea display glass index to account for variation in CRT prices due to changes

21 in production costs. Hr'g Tr. 38:4-9; TX 3 (Netz Rpt.) at 102-103.

22   85.   Dr. Netz's equation includes three different variables relating to the Bank of Korea

23 glass index. Hr'g Tr. 38:10-22. *Glass* measures the price of glass at a particular point in time.

24 *(Glass × size)* allows for the possibility that changes in glass prices affect CRT prices differently

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26 [7] Cost data beginning January 1991 have been requested from Defendants. However, the
   defendant-specific cost data produced were insufficient to be directly included in the regression
27 analysis. TX 3 (Netz Rpt.) at 102.

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1   for different CRT sizes. *(Glass × size^2)* allows for a non-linear effect of a change in glass prices

2   on CRT prices. TX 3 (Netz Rpt.) at 104. These latter variables account for the fact that the bigger

3   the CRT, the more glass that is needed, and that, for example, "the incremental glass needed to

4   produce a 15-inch relative to a 14-inch tube is less than the incremental glass needed to produce

5   a 21-inch tube relative to a 20-inch tube." Hr'g Tr. 38:10-22.

6   86.   Dr. Netz researched and considered using additional direct cost variables, such as

7   labor costs. However, since labor costs vary by country and she lacked data on the specific

8   manufacturing locations of the tubes, she was unable to match the tubes with the relevant labor

9   costs. *Id.* at 37:25-39:6. Moreover, Dr. Netz decided not to include additional sources because

10   using too many variables may lead to problems of spurious correlation and multicollinearity. *Id.*

11   at 96:23-97:22; TX 5 (Netz Rebuttal) at 45. Finally, variables in Dr. Netz's overcharge model

12   other than the CRT glass cost variables also control for costs. Hr'g Tr. 43:20-44:3, 77:7-18.

13   87.   The next line of the equation contains the demand-related variables that Dr. Netz

14   utilized. To account for changes in demand conditions due to consumer income, Dr. Netz used

15   GDP and unemployment data from the Organisation for Economic Co-Operation and

16   Development (OECD), which included 25 countries at the beginning of the Class Period and rose

17   to 30 countries by the end of the Class Period, including most of the countries in Europe, all of

18   the NAFTA countries, Japan, South Korea, Australia and New Zealand. *Id.* at 40:14-41:13; TX

19   3 (Netz Rpt.) at 103. OECD is a source commonly used by economists. TX 3 (Netz Rpt.) at 103.

20   While Dr. Netz's OECD GDP and unemployment variables are primarily demand controls, they

21   also control for cost. Hr'g Tr. 77:7-18.

22   88.   Dr. Netz also included demand variables relating to LCDs because LCD products

23   could be substitutes for end users. To account for changes in the level of demand for CRTs, data

24   on worldwide LCD TV and monitor revenues as a share of total TV and monitor revenues are

25   included in the regression analysis. *LCD* allows for such changes in the revenue share of LCD

26   products to affect CRT prices differently depending on the prevalence of LCDs. *Id.* at 41:19-

27   42:15; TX 3 (Netz Rpt.) at 103-104.

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89.   In the last line of the equation, Dr. Netz includes time, quarter and maker variables to account for the possible effect of additional cost and demand factors on CRT price that have not already been controlled for by the other variables. Hr'g Tr. 42:16-23; TX 3 (Netz Rpt.) at 103-104.

90.   *Time* and *Time²* are time variables that allow for a non-linear trending influence on price. Hr'g Tr. 42:24-43:6; TX 3 (Netz Rpt.) at 104.

91.   The *Quarter* variable equals one in the relevant calendar quarter of the year to account for seasonal trends in CRT prices. For example, there tends to be an increase in demand for CRT products around the holidays. Hr'g Tr. 43:7-11; TX 3 (Netz Rpt.) at 104.

92.   The *Maker* and *Maker x Size* variables capture any supply or demand effects that are specific to the particular manufacturer of the tube, which allow for the possibility of different qualities or efficiencies at production and account for the possibility that price differences between CRTs may vary based on the maker and size. Hr'g Tr. 43:12-19; TX 3 (Netz Rpt.) at 104.

93.   Dr. Netz's equation controls for costs and demands throughout the model, not just by those explicit cost variables (such as Glass) or demand variables (such as GDP, Unemployment, and LCD). Hr'g Tr. 43:20-44:3, 77:1-10. Dr. Netz's economic judgment and her selection of these control variables were reasonable. Collectively, the variables in the second, third, and fourth lines of the equation sufficiently control for non-cartel related cost and demand influences on CRT prices.

94.   Ms. Guerin-Calvert, Irico's expert, suggests adding a number of additional explanatory variables to Dr. Netz's regression model. These additional variables introduce multicollinearity into Ms. Guerin Calvert's model and would do so in Dr. Netz's model. *Id.* at 54:12-55:7; *see also id.* at 126:13-128:11, 164:2-165:4.

95.   Multicollinearity affects both the precision and reliability of Ms. Guerin-Calvert's regression model estimates. *Id.* at 96:23-97:22; *see also id.* at 135:1-13, 159:14-160:11, 181:25-185:23. The greater the multicollinearity, the greater the impact on the reliability of the estimates.

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Id. at 55:21-56:4. Ms. Guerin-Calvert acknowledges that her model cannot distinguish what portion of her overcharge estimates was due to the cartel and what portion was due to market factors. *Id.* at 379:13-380:7. The multicollinearity in Ms. Guerin-Calvert's regression model conflates the effects of the cartel and market factors on price, making her coefficients unreliable estimates of the cartel effect. *Id.* at 300:1-10.

96.   Dr. Netz performed sensitivity tests by individually adding each of the additional cost and demand variables Ms. Guerin-Calvert suggested as additional explanatory variables to her (Dr. Netz's) model. *Id* .at 39:10-40:13. The results show that her "model was robust to the inclusion of those variables," inclusion of those variables "did not make the results change significantly" (*id.* at 39:25-40:13), and that including the suggested variables did not explain meaningfully more price variation than the model she estimated (TX 5 (Netz Rebuttal) at 62 and n.293 and Ex. RR-99). As an additional sensitivity test, Dr. Netz added an IMF Fuel Index variable to her base model as an explanatory variable to better address shipping costs than the variable suggested by Ms. Guerin-Calvert and Professor Willig, and showed that the cartel-imposed CDT and CPT overcharges remained positive and significant for both 1995-2006 and 2007 time periods. *Id.* at 61-62 and RR-99.

97.   When Dr. Netz added Ms. Guerin-Calvert's suggested Korean labor cost to her (Dr. Netz's) model, the cartel-imposed CDT overcharge for both 1995-2006 and 2007 time periods increased to 30.2% and 23.4%, respectively. Hr'g Tr. 39:10-40:7; TX 5 (Netz Rebuttal), Ex. RR-99. Ms. Guerin-Calvert fails to provide an economic justification for adding Korean labor cost as an explanatory variable, admitting that both CDTs and CPTs were manufactured in many countries other than Korea. Hr'g Tr. 317:12-318:7; *see also* TX 3 (Netz Rpt.), Ex. 3 (listing over 20 countries other than Korea in which CRTs were produced, including 13 countries outside of Asia).

98.   When Baltic Dry Index was added to Dr. Netz's base model, as a purported control for shipping costs, the cartel-imposed CDT overcharge for both 1995-2006 and 2007 time periods increased to 25.0% and 15.5%, respectively. TX 5 (Netz Rebuttal), Ex. RR-99. Ms. Guerin-

1   Calvert fails to provide an economic justification for adding Baltic Dry Index as an explanatory

2   variable, conceding that this index relates to raw materials and CRTs are not raw materials. Hr'g

3   Tr. 312:21-313:1, 314:6-17. She also conceded, by adopting Professor Willig's opinions, that

4   this index is irrelevant to CPTs manufactured in North America. *Id.* at 316:6-12.

5   99.   When the desktop shipments variable was added to Dr. Netz's base model, the

6   cartel-imposed CDT overcharge for both 1995-2006 and 2007 time periods increased to 28.2%

7   and 19.5%, respectively. TX 5 (Netz Rebuttal), Ex. RR-99. As Dr. Netz explained, it would be

8   inappropriate to add this control because the desktop shipments variable is partially

9   endogenous—meaning that the price of tubes partly determines the shipments of desktop

10   computers, leading to biased coefficient estimates. Hr'g Tr. 80:12-81:7; *see also* American Bar

11   Association, *Proving Antitrust Damages* (3d. ed. 2017), at 149 ("In the language of econometrics,

12   this correlation with the error term is known as endogeneity. This misspecification will bias the

13   resulting coefficient estimates, and make these estimates unreliable for damage estimation. This

14   bias does not diminish as sample size increases.").

15   100.   Similarly, it is unnecessary and inappropriate to include Korean Won-U.S.-dollar

16   exchange rate because Dr. Netz converted all currency-related variables to U.S. dollars, thereby

17   already controlling for exchange rates in her base model. TX 7 (Netz Daubert Decl.) at 5. When

18   this variable was added to Dr. Netz's base model, the overcharge estimate for 1995-2006 was

19   16.5% for CDT and 7.6% for CPT; both are statistically significant. TX 5 (Netz Rebuttal), Ex.

20   RR-99.

21   101.   Finally, when U.S. electronics retail stores sales variable was added to Dr. Netz's

22   base model, the cartel-imposed CPT overcharges are still positive for both time periods and

23   significant for 1995-2006. *Id.* Because this variable "estimates sales at U.S. electronics and

24   appliance stores," it includes all types of appliances, thus making the variable a poor proxy for

25   demand for CPTs. TX 10 (Willig Rpt.) ¶ 101 n.113; TX 5 (Netz Rebuttal) at 62 and Ex. RR-99.

26   102.   Dr. Netz's overcharge model provides a good statistical fit to the data and the

27   results are statistically significant. TX 3 (Netz Rpt.) at 105 and Ex. 65. Specifically, the variables

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1   Dr. Netz included in her model explain over 95% of CDT price variation and over 98% of CPT

2   price variation. TX 5 (Netz Rebuttal) at 61 and Ex. RR-99. A regression model cannot include

3   variables to capture and control for all market factors; it need control only for major market

4   factors. Hr'g Tr. 69:5-10. Ms. Guerin-Calvert's model does not control for all market factors.

5   *Id.* at 376:12-15.

6   103.   Dr. Netz's overcharge regression model results are well within the range of typical

7   cartel overcharges as reported in the economic literature. *Id.* at 47:25-48:10; TX 3 (Netz Rpt.) at

8   105 and n.311 (citing Connor and Lande (2012), which found that the median overcharge in

9   scholarly studies of 1,517 estimates of cartel overcharges is 23.3% over all time periods and

10 cartels and is higher, at 30.0%, for international cartels).

11   104.   To check the robustness of her regressions, Dr. Netz performed several additional

12 sensitivity tests (beyond investigating the variables suggested by Ms. Guerin-Calvert and

13 Professor Willig) to assess how sensitive the model is to slight variations in variables and

14 assumptions, including adding CDT sales occurring after 2008 to the benchmark period for CDTs;

15 removal of squared demand terms (unemployment and LCD revenue share); use of lagged glass

16 costs and demand variables instead of contemporaneous glass costs and demand variables; ending

17 the cartel period at the announcement of the LCD investigation; and maintaining the cartel period

18 from the Complaint but forcing the overcharge rate to be the same throughout the period. TX 3

19 (Netz Rpt.) at 105-106.

20   105.   For each sensitivity analysis the overcharge estimate remained positive and

21 significant for both CDTs and CPTs and had a very similar magnitude to Dr. Netz's base model

22 overcharge estimates. *Id.* at 106 and Ex. 65.

23   106.   Although Ms. Guerin-Calvert stated that sensitivity analyses are pertinent for

24 judging regression results, she neither criticized nor otherwise discussed Dr. Netz's sensitivity

25 analyses. TX 5 (Netz Rebuttal) at 60.

26   107.   The reliability of Dr. Netz's model is further buttressed by the fact that Dr. Netz

27 and Dr. Phillip Johnson (DPPs' expert) use substantially similar explanatory variables. Hr'g Tr.

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152:12-154:18; TX 202 (Johnson Rpt.) at 29.   Yet, Ms. Guerin-Calvert, in criticizing Dr.

Johnson's model, did not suggest including any of the additional control variables that she

suggested for Dr. Netz's model, but instead divided the cartel variables into annual sub-periods.

Hr'g Tr. 163:12-21.

b. ***Irico's Expert's Criticisms Do Not Undermine Dr. Netz's Overcharge Models or the Reliability of Her Estimates***

108.   Irico's economics expert, Ms. Guerin-Calvert, leveled multiple criticisms against

Dr. Netz's overcharge model. *See* TX 11 (Guerin-Calvert Rpt.) ¶¶ 110-139; Willig Rpt. ¶¶ 77-

101. Ms. Guerin-Calvert's criticisms are without merit, and they do not undermine the

reasonableness of Dr. Netz's multiple regression overcharge models or the reliability of her model

results.

109.   Contrary to Ms. Guerin Calvert's characterization, her alterations to Dr. Netz's

model specifications are major and lack economic justifications. *Compare* TX 13 (Guerin-

Calvert Surrebuttal), ¶¶ 9, 19 (characterizing her modifications as "relatively few adjustments")

with Hr'g Tr. 234:18-235:1 (conceding that she made "significant modifications" to Dr. Netz's

model); *see also id.* at 350:5-9 (referring to modifications of Dr. Johnson's regression as "major").

110.   Ms. Guerin-Calvert provided an alternative estimate of overcharges by segmenting

Dr. Netz's 1995-2006 cartel dummy variable into three periods—1995, 1996, and 1997-2006,[8]

and adding multiple other control variables. As discussed above, these additional variables

created significant multicollinearity in Ms. Guerin-Calvert's model. These multicollinearity

issues, combined with the lack of a sensible economic rationale for segmentation of the 1995-

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[8] Ms. Guerin-Calvert's decision that Dr. Netz's model must be altered to put in cartel dummy variables for 1995 and 1996 is inconsistent with the opinions of Professor Willig (whose opinions Ms. Guerin-Calvert purports to adopt in full), whose overcharge regression used to estimate CPT damages does not divide the 1995-2006 time period into multiple cartel dummy variables. *See* TX 14 (Guerin-Calvert Supp. Rpt.) ¶ 14; TX 10 (Willig Rpt.) ¶ 101; Hr'g Tr. 307:3-308:4. Professor Willig did so despite the fact that he, like Ms. Guerin-Calvert, opined that target price evidence was lacking in 1995 and 1996, and despite the fact he, like Ms. Guerin-Calvert, opined that glass shortages in 1995 and 1996 increased CRT prices. Hr'g Tr. 305:3-306:24.

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2006 cartel dummy variable, render Ms. Guerin-Calvert's coefficient estimates and hence her criticisms of Dr. Netz's model unreliable.[9]   The results of Ms. Guerin-Calvert's "improved model" show overcharges of 16.1% in 1995, 23.5% in 1996, and overcharge of 1.6% for 1997-2006. Hr'g Tr. 299:3-13; TX 11 (Guerin-Calvert Rpt.) ¶ 131 (showing Table 8).

111.   Contrary to her justification for breaking up Dr. Netz's and Dr. Johnson's dummy variables into shorter periods in order to "let the data speak," Ms. Guerin-Calvert ignores the results of her own model. Hr'g Tr. at 248:22-249:6, 298:22-299:2, 299:20-300:15, 387:25-388:17.   Ms. Guerin-Calvert's "improved model" estimates statistically significant CDT overcharges of 16.1% and 23.5% for 1995 and 1996, respectively. In her damages calculation that she offers to the Court, however, Ms. Guerin-Calvert disregards those results and instead "assumes" that the 1.6% overcharge for 1997-2006 generated by her "improved model" should be applied to 1995 and 1996 as well. *Id.* at 299:20-300:15. TX 11 (Guerin-Calvert Rpt.) ¶ 130 ("I have assumed that the overcharge in 1995 and 1996 was the same percentage (1.6 percent) as the overcharge that the modified model estimates for the years 1997-2006").[10]

112.   To justify discarding the large overcharges for 1995 and 1996 generated from her own model, Ms. Guerin-Calvert claims that there was minimal collusive activity during those years, and that industry conditions, rather than cartel activity, elevated prices. TX 11 (Guerin-Calvert Rpt.) ¶¶ 116, 130. However, Ms. Guerin-Calvert's portrayal of cartel activity in 1995 and 1996 contradicts the allegations of the IPP complaint and the evidence. TX 3 (Netz Rpt.) at 99; FOF ¶¶ 45-46, *supra*.

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[9] As Ms. Guerin-Calvert conceded, her sub-periods modifications introduced "confounding effect[s]." Hr'g Tr. 300:1-10, 394:4-14.

[10] In her surrebuttal report, Ms. Guerin-Calvert calculated the weighted average overcharge for CDTs using the actual coefficients for 1995 and 1996 that she ultimately disregarded. This calculation generated a weighted average overcharge of 6.35% on CDTs for 1995 to 2007. Yet she offers the lower 1.6% overcharge as her alternative overcharge estimate. TX 13 (Guerin-Calvert Surrebuttal) ¶ 28 n.26; Hr'g Tr. 302:6-303:8.

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113.   Ms. Guerin-Calvert attributes the higher prices in 1995 and 1996 to changes in industry conditions, such as tight CDT capacity, glass shortage, and the demand shock from the introduction of Windows 95. TX 11 (Guerin-Calvert Rpt.) ¶ 118; TX 10 (Willig Rpt.) ¶ 76. Each of these "justifications" fails.

114.   Dr. Netz's overcharge model already accounted for CRT supply and demand factors to capture relevant changes across time in competitive conditions. Hr'g Tr. 42:24-43:6, 54:12-55:7, 77:1-10, 91:5-11; TX 3 (Netz Rpt.) at 104; TX 5 (Netz Rebuttal) at 57. For example, Dr. Netz's model controls for changes in CRT glass prices for each year, including 1995 and 1996, to isolate the price effect due to the cartel from the price effect due to changes in glass prices. TX 5 (Netz Rebuttal) at 58. While Ms. Guerin-Calvert reported and relied on the fact that CRT glass shortages in 1995 were the major cause of CRT price increases in 1995, she acknowledges that Dr. Netz's overcharge model captures changes in the cost of CRT glass. Hr'g Tr. 327:15-330:4.

115.   Ms. Guerin-Calvert also relied on tight CDT capacity in the 1995-1996 timeframe. *Id.* at 330:9-12; TX 11 (Gerin-Calvert Rpt.) ¶ 126. But this claim is inconsistent with industry recognition that "[b]y Toshiba's calculations, capacity equaled output in 1995 and thereafter exceeded output by 19% in 1996, 31% in 1997, 37% in 1998, 35% in 1999, and 27% in 2000."); Hr'g Tr. 330:9-332:18; TX 11 (Guerin-Calvert Rpt.) ¶ 87 n.128 (quoting TX 3 (Netz Rpt.) at 20).

116.   Contrary to Ms. Guerin-Calvert's claims, changing industry conditions provided opportunities for the cartel to slow down price declines and enable faster price hikes through competitor meetings. TX 5 (Netz Rebuttal) at 57; Hr'g Tr. 332:19-336:3.

117.   The so-called Windows 95 "demand shock" also does not support Ms. Guerin-Calvert's segmentation of the 1995-1996 conspiracy dummy variable. Windows 95 was not released publicly until August 24, 1995. Hr'g Tr. 91:22-24. Ms. Guerin-Calvert's suggested desktop shipments data did not show evidence of a "demand shock." *Id.* at 95:5-19. In any event, any such change in demand is sufficiently captured by the demand and time trend variables in Dr.

Netz's overcharge model, and her model adequately controls for any impact on CDT price due to the launch of Windows 95. *Id.* at 92:18-23, 102:12-19.[11]

118.   To test whether her model results are reliable under the overcharge time periods Dr. Netz specified, Dr. Netz broke the cartel period into three time periods that match economic events rather than random calendar year subsets as follows: period 1, when CRTs were more prevalent than LCDs; period 2, when LCDs dominated the market; and period 3, when the collusion allegations came to light. The results are similar to those in Dr. Netz's original expert report.[12] *Id.* at 56:21-57:16; TX 7 (Netz Daubert Decl.) at 9-10 and Tables 1 and 2.

E.   The Direct Overcharges Were Passed Through to the Indirect Purchaser Classes

119.   The overcharges caused by the cartel on direct purchasers of CRTs were fully (100%) passed through the distribution chain to the ultimate consumers of computer monitors and TVs. TX 3 (Netz Rpt.) at 118. The ultimate consumers of computer monitors and TVs comprise the membership of the various indirect-purchaser classes.

120.   Dr. Netz calculated pass-through rates of the overcharges for both CDTs and CPTs of at least 100% for all levels of the distribution channel. *Id.* at 111-118. Dr. Netz's pass-through analyses and opinions are informed and supported by well-accepted economic theory, the relevant economic facts of this case, including acknowledgements and observations by Defendants and other market participants, as well as 63 empirical pass-through studies. Hr'g Tr. 49:1-18; TX 3 (Netz Rpt.) at 82-95, 106-118.

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[11] When Dr. Netz added desktop shipment variable as a sensitivity test, the CDT overcharge increased from 22.0% to 28.2% for the time period from 1995 to 2006. *Id.* at 309:18-312:17; TX 5 (Netz Rebuttal), Ex. RR-99. In contrast, Ms. Guerin-Calvert did not perform any empirical analysis to measure any purported effect of Windows 95 "demand shock" on CDT prices. Hr'g Tr. 163:5-21, 365:19-366:2.

[12] Dr. Netz's model already directly controls for the shares of LCD sales. Breaking the cartel variable into additional periods tied to LCD dominance confirmed that the LCD variables sufficiently controlled for the growth of LCD products, and supports her class-wide overcharge estimates. TX 7 (Netz Daubert Decl.) at 10.

121.   Irico did not challenge Dr. Netz's pass-through analyses or opinions. Hr'g Tr. 48:11-25.

122.   As a result of the overcharges caused by the CRT cartel to direct purchasers of CDTs and CPTs and the 100% pass-through of those overcharges through the distribution chains to the ultimate consumers of computer monitors and TVs, the members of the indirect-purchaser classes were harmed.

VI.   DAMAGES TO CLASS MEMBERS ARE $2,697,957,236

123.   Dr. Netz calculated the aggregate dollar amount of damages to the indirect-purchaser classes by multiplying the revenues received by Defendants and Co-conspirators identified in IPPs' Complaint from sales to class members of computer monitors and TVs during the relevant period, by the applicable CPT and CDT overcharge rates and pass-through rates. Hr'g Tr. 51:25-52:15; TX 3 (Netz Rpt.) at 119.

124.   Dr. Netz estimated global CRT revenues for all manufacturers, including Defendants and Co-conspirators, by combining publicly available shipment data with average wholesale prices from Defendants' sales records. She estimated shipments, prices, and revenues by CRT type and size, using Defendants' internal documents, industry reports, and reasonable extrapolations where data was missing. To estimate Defendants' market shares and revenues, she multiplied shipment volumes by average prices and adjusted for years with incomplete data. She then calculated the portion of global revenue attributable to U.S. non-governmental sales. Finally, she calculated the share of non-government U.S. revenue that accrues from sales in the IPP Class States on a population basis. Hr'g Tr. 51:25-53:4; TX 3 (Netz Rpt.) at 119-123.

125.   The publicly available data Dr. Netz used in calculating damages are recognized by economists as reliable for analyses of this nature. Hr'g Tr. 52:25-53:4.

126.   At the damages hearing, Irico did not contest Dr. Netz's calculations. Irico's economics expert, Ms. Guerin-Calvert, has not disclosed or otherwise expressed any opinion on Dr. Netz's calculation of the total revenue attributable to purchases by class members.

127.   Dr. Netz's estimation of $17,090,136,127 revenue to the Defendant cartel members attributable to purchases by class members is reasonable and related to the economic facts of this case.

128.   Dr. Netz calculated damages to indirect-purchaser class members as class expenditures multiplied by the overcharge rate relative to the cartel price multiplied by the pass-through rate. Dr. Netz calculated damages separately for each application type (CPTs and CDTs) as well as separately for two groups of CRT manufacturers, Defendants and Co-conspirators.

129.   Specifically, Dr. Netz estimated aggregate damages to class members over the entire Class Period, March 1, 1995 through November 25, 2007, to be $2,697,957,236, including $1,971,410,524 in CDT damages and $726,546,712 in CPT damages. Hr'g Tr. 16:16-17:7; TX 3 (Netz Rpt. Errata) at 1, Ex. ER-81. These estimates are reasonable and reliable.

PROPOSED CONCLUSIONS OF LAW

I.   JURISDICTION

1.   This court has jurisdiction under the Class Action Fairness Act of 2005, 28 U.S.C. § 1332(d).

II.   LIABILITY

2.   Default has been entered against Irico, and its answers, including affirmative defenses, have been stricken. *In re Cathode Ray Tube (CRT) Antitrust Litig.*, MDL No. 1917, 2024 WL 4823938, at *23 (N.D. Cal. Nov. 15, 2024). The entry of default conclusively established Irico's liability to IPPs for violation of the state antitrust and consumer protection laws cited in the CAC. *See Adriana Int'l Corp. v. Thoeren*, 913 F.2d 1406, 1414 (9th Cir. 1990).

3.   As the court previously ruled, IPPs "may recover damages from Irico dating back to March 1, 1995, the alleged latest start date of the conspiracy." Order Sustaining Evidentiary Objections and Setting Start Date for Damages (May 14, 2025), ECF No. 6482. IPPs' complaint "sufficiently allege[s] Irico's liability beginning on March 1, 1995." *Id.* at 2.

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4.   IPPs properly alleged proximate cause in the complaint; thus, "it is admitted upon default." *See Elektra Ent. Grp., Inc. v. Bryant*, No. CV 03-6381 GAF (JTLx), 2004 WL 783123, at *2 (C.D. Cal. Feb. 13, 2004). "Injury is established and plaintiff need prove only that the compensation sought relates to the damages that naturally flow from the injuries pled." *Id.*

5.   The only remaining issue is the proper measure of damages. *See CRT,* 2024 WL 4823938, at *23 (ordering the parties to file a statement "regarding how to determine damages"); *see also Thoeren*, 913 F.2d at 1414 ("[A] default judgment generally precludes a trial of the facts except as to damages."); *ISA Plus, LLC v. Prehired, LLC*, No. 3:22-CV-01211-JAH-JLB, 2024 WL 1469524, at *2 (S.D. Cal. Apr. 4, 2024) ("Because the Court determined that default judgment is appropriate as to Plaintiff's . . . claims, the sole issue remaining is damages.").

III.   LEGAL STANDARDS FOR DAMAGES

A.   Default

6.   Upon default, a "[p]laintiff's burden in 'proving up' damages is relatively lenient. If proximate cause is properly alleged in the complaint, it is admitted upon default." *Elektra*, 2004 WL 783123, at *2 (citation omitted). "Injury is established and plaintiff need prove only that the compensation sought relates to the damages that naturally flow from the injuries pled." *Id.*; *see Domanus v. Lewicki*, 742 F.3d 290, 303 (7th Cir. 2014) (stating courts have "'broad latitude' in quantifying damages") (citation omitted); *Vanngo v. Beauty Advisor, LLC*, No. 21-CV-07035-JST(AGT), 2022 WL 2289066, at *3 (N.D. Cal. Mar. 21, 2022) (holding that plaintiffs had sufficiently proven damages and citing *Elektra* and *Domanus*), *report and recommendation adopted*, 2022 WL 21768596 (N.D. Cal. July 21, 2022) (Tigar, J.). Plaintiffs may recover damages based on a reasonable estimate. *See Flynn v. Extreme Granite, Inc.*, 671 F. Supp. 2d 157, 162 (D.D.C. 2009); *Sec. & Exch. Comm'n v. Pedras*, No. CV 13–7932 GAF (MRWx), 2014 WL 12597332, at *8 (C.D. Cal. Apr. 16, 2014) ("[The] damages calculation may not be 'clearly erroneous' and must have some basis in declarations, testimony, deposition transcripts, or other material evidence.") (citation omitted).

7.   Where, as here, a defendant's failure to preserve and produce evidence prevents plaintiffs from developing their claims, plaintiffs are entitled to all reasonable inferences that can be drawn from the complaint and the evidence. *See Freeman v. Giuliani*, 732 F. Supp. 3d 30, 37 (D.D.C. 2024) (stating that due to default judgment, "the well-pled allegations . . . and all inferences that may reasonably be drawn from those allegations [were] deemed to be true") (citation omitted); *In re Consol. Pretrial Proc. in Air W. Sec. Litig.*, 436 F. Supp. 1281, 1286 (N.D. Cal. 1977) ("[T]he party in whose favor a default has been entered is entitled to the benefit of all reasonable inferences from the evidence tendered[.]"); *United States v. Torres*, No. 2:12-CV-10530-SVW, 2013 WL 7137587, at *4 n.1 (C.D. Cal. Apr. 17, 2013) (finding date by which defendant was on notice of noncompliance could be "reasonably inferred" from application for default judgment and declarations).

8.   While Federal Rule of Civil Procedure 54(c) provides that "[a] default judgment must not differ in kind from, or exceed in amount, what is demanded in the pleadings," the rule does not preclude awarding actual damages in a default judgment when the complaint has sought those damages to be determined at trial. This principle is upheld in *AirDoctor, LLC v. Xiamen Qichuang Trade* Co., 134 F.4th 552, 555 (9th Cir. 2025) (*per curiam*), and further supported by *Henry v. Sneiders*, 490 F.2d 315, 317 (9th Cir. 1974), which held that a default judgment is not limited to an amount specified in the complaint if the plaintiff has prayed for additional damages in an amount to be proven at trial.

9.   Courts apply the preponderance of the evidence standard to a plaintiff's damages case on default judgment. *See Whitesell Int'l Corp. v. Smith Jones, Inc.*, 827 F. Supp. 2d 964, 968 (S.D. Iowa 2011) (applying preponderance standard); *Williams v. La Perla N. Am., Inc.*, No. 3:23-CV-01633-JSC, 2024 WL 4165275, at *2 (N.D. Cal. Aug. 28, 2024) (same); *F.D.I.C. v. Hawker*, No. 1:12-CV-00127-SAB, 2013 WL 1314153, at *3 (E.D. Cal. Apr. 1, 2013) (same); *see also* Ninth Circuit Manual of Model Jury Instructions, Civil (2017), Instruction 5.1 (Damages—Proof).

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B.   Antitrust

10.   Courts employ a relaxed standard in determining damages in antitrust actions for two reasons. First, they recognize the difficulty in identifying the but-for world. *See In re Restasis (Cyclosporine Ophthalmic Emulsion) Antitrust Litig.*, 335 F.R.D. 1, 32 (E.D.N.Y. 2020) ("Courts recognize that, [g]iven the inherent difficulty of identifying a but-for world, antitrust damages need not be measured with certainty.") (internal quotation marks and citation omitted).

11.   Second, antitrust offenders must bear the risk of the uncertainty their conduct has created. *See J. Truett Payne Co. v. Chrysler Motors Corp.*, 451 U.S. 557, 566-67 (1981) ("[I]t does not come with very good grace for the wrongdoer to insist upon specific and certain proof of the injury which it has itself inflicted") (internal quotation marks and citation omitted); *Bigelow v. RKO Radio Pictures*, 327 U.S. 251, 265 (1946) ("The most elementary conceptions of justice and public policy require that the wrongdoer shall bear the risk of the uncertainty which his own wrong has created."). "Different standards govern proof of the fact and proof of the amount of damages." *Knutson v. Daily Rev., Inc.*, 548 F.2d 795, 811 (9th Cir. 1976) (citation omitted). "The Supreme Court has . . . established a relaxed standard for proving the amount of damages in an antitrust case once the fact of damage has been shown." *Id.*; *see Handgards, Inc. v. Ethicon, Inc.*, 743 F.2d 1282, 1297 (9th Cir. 1984) ("Once the fact of antitrust injury is proven, we have traditionally required a lesser quantum of proof to support the amount of damages."); *In re Live Concert Antitrust Litig.*, 247 F.R.D. 98, 144 (C.D. Cal. 2007) ("The required quantum of proof necessary to prove the amount of damages is less than that required to prove the fact of damages.") (citation omitted).

12.   Estimated overcharge amounts in antitrust cases do not need to be determined with mathematical precision. Damages may be awarded based on average estimated overcharges paid by class members as long as the average estimate is based on evidence and reasonable inference. Indeed, the Supreme Court has long emphasized that reasonable damages estimates will suffice. *See Bigelow*, 327 U.S. at 264 (stating factfinder "may make a just and reasonable estimate of the

1   damage based on relevant data"); *Story Parchment Co. v. Paterson Parchment Paper Co.*, 282

2   U.S. 555, 563 (1931) ("[I]t will be enough if the evidence show the extent of the damages as a

3   matter of just and reasonable inference, although the result be only approximate."); *see also Loeb*

4   *Indus., Inc. v. Sumitomo Corp.*, 306 F.3d 469, 493 (7th Cir. 2002) ("Since the days of *Eastman*

5   *Kodak Co. v. Southern Photo Materials Co.*, 273 U.S. 359, 379 (1927), it has been established

6   that in complicated antitrust cases plaintiffs are permitted to use estimates and analysis to

7   calculate a reasonable approximation of their damages.") (cleaned up).

**IV.   THE COURT CREDITS DR. NETZ'S CAUSATION AND DAMAGES
         ANALYSES**

13.   IPPs' economics expert Dr. Netz's opinion that the cartel conduct affected all

CRTs by raising their prices above competitive levels and her opinion on the dollar amounts of

that harm are consistent with well-accepted economic theory, based on the economic facts of the

case and supported by reasonable and reliable empirical analyses, and hence should be credited.

14.   As discussed in the Court's Findings of Fact (FOF ¶¶ 25-129, *supra*), to assess the

cartel's impact and quantify the magnitude of the harm on class members, Dr. Netz relied upon

the economic facts of this case, economic theory, and empirical analyses examining the data. Her

methodologies and multiple regression models are widely accepted in antitrust cases. *See Olean*

Wholesale Grocery Coop., Inc. v. Bumble Bee Foods LLC, 31 F.4th 651, 677 (9th Cir. 2022) ("In

antitrust cases, regression models have been widely accepted as a generally reliable econometric

technique to control for the effects of the differences among class members and isolate the impact

of the alleged antitrust violations on the prices paid by class members."); *In re Cathode Ray Tube*

(CRT) Antitrust Litig., 308 F.R.D. 606, 629 (N.D. Cal. 2015) (concluding that "use of regression

and correlation analysis is well established as a means of providing classwide proof of antitrust

injury and damages."). "[A] regression analysis that includes less than 'all measurable variables'

may serve to prove a plaintiff's case." *Bazemore v. Friday*, 478 U.S. 385, 400 (1986).

15.   "Multiple-regression analysis is a statistical tool that permits the comparison

between an outcome (called the dependent variable) and one or more factors (called independent

1   variables) that may be related to that outcome." *Apple iPod iTunes Antitrust Litig.*, No. 05-CV-

2   0037 YGR, 2014 WL 4809288, at *3 (N.D. Cal. Sept. 26, 2014) (citation omitted). "[N]o complex

3   model is perfect. At the end of the day, a regression model is meant to generate *estimates* for

4   what the modeler is attempting to measure." *City of Philadelphia v. Bank of Am. Corp.*, No. 19-

5   CV-1608 (JMF), 2023 WL 6160534, at *5 (S.D.N.Y. Sept. 21, 2023). That two experts use

6   different models does not mean that one is unreliable. "[E]conometrics is in the family of social

7   sciences and therefore necessarily contains certain value judgments and hypotheses that are tested

8   and used in conjunction with statistics." *Apple iPod iTunes*, 2014 WL 4809288, at *6.

9   16.   "[I]t is often the case that experts reach conflicting conclusions based on applying

10   different but nevertheless reliable methodologies to a set of partially known facts." *Baugh v.*

11   *Cuprum S.A. de C.V.*, 845 F.3d 838, 847 (7th Cir. 2017); *see United States v. Morgan*, 53 F. Supp.

12   3d 732, 741 (S.D.N.Y. 2014) ("[U]nder *Daubert*, the possibility that a different conclusion could

13   be drawn from validation data does not undercut the reliability of the conclusion that was drawn,

14   as long as the expert has 'good grounds' for the chosen interpretation."), *aff'd*, 675 F. App'x 53

15   (2d Cir. 2017).

16   17.   The Court concludes that IPPs have proven by a preponderance of the evidence

17   that conduct of the cartel affected all CRTs by raising their prices above competitive levels.

18   18.   The model Dr. Netz used to measure overcharge is reasonable and reliable. *See In*

19   *re Cathode Ray Tube Antitrust Litig.*, MDL No. 1917, 2023 WL 5963475, at *1 (N.D. Cal. Sept.

20   12, 2023) (denying motion to exclude testimony of Dr. Netz).

21   **V.   CONCLUSION**

22   19.   For the reasons set forth above, the Court awards IPPs actual damages in the

23   amount of $2,697,957,236.00.

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25   Dated: June 4, 2025   By: /s/ Mario N. Alioto

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